



DEPARTMENT OF COMMERCE

Bureau of Industry and Security

15 CFR Part 774

[Docket No. 210923-0195]

RIN 0694-AI44

Control of Deuterium that is Intended for Use Other Than in a Nuclear Reactor under the Export Administration Regulations (EAR)

AGENCY: Bureau of Industry and Security, Department of Commerce.

ACTION: Final rule.

SUMMARY: The Department of Commerce is publishing this final rule in conjunction with a U.S. Nuclear Regulatory Commission (NRC) final rule to revise its regulations to remove the NRC's licensing authority for exports of deuterium for non-nuclear end use. The responsibility for the licensing of exports of deuterium for non-nuclear end use is being transferred to the Department of Commerce's Bureau of Industry and Security (BIS). BIS is publishing this final rule to include deuterium under its export licensing jurisdiction under the Export Administration Regulations (EAR). This Commerce final rule describes the changes made to the EAR to control the deuterium moved from the export control authority of the NRC to the export control authority of BIS under the EAR. Exports of deuterium for nuclear end use will remain under the NRC's export licensing jurisdiction.

DATES: This rule is effective [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

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SUPPLEMENTARY INFORMATION:

Background

The Department of Commerce is publishing this final rule in conjunction with a U.S. Nuclear Regulatory Commission (NRC) final rule being published in this issue of the **Federal Register** to revise its regulations to remove the NRC's licensing authority for exports of deuterium for non-nuclear end use. The responsibility for the licensing of exports of deuterium for non-nuclear end use is being transferred to the Department of Commerce's Bureau of Industry and Security (BIS). BIS is publishing this final rule to include deuterium under its export licensing jurisdiction under the Export Administration Regulations (EAR). This Commerce final rule describes the changes made to the EAR to control the deuterium moved from the export control authority of the NRC to the export control authority of BIS under the EAR. Exports of deuterium for nuclear end use will remain under the NRC's export licensing jurisdiction.

Deuterium under NRC and its evolution into broader commercial use

Section 109 of the Atomic Energy Act of 1954 (AEA), as amended by the Nuclear Non-Proliferation Act of 1978 (NNPA), authorizes and directs the NRC, after consultation with the Secretaries of State, Energy, and Commerce, to exercise its export licensing authority over "items or substances" determined by the Commission to be "especially relevant from the standpoint of export control because of their significance for nuclear explosive purposes" (42 U.S.C. 2139(b)). Since 1978, under this authority, the NRC has exercised jurisdiction over all exports of deuterium, including heavy water, as well as deuterium gas and other deuterated compounds for both nuclear and non-nuclear end uses. In the early years of the nuclear energy industry, deuterium oxide (heavy water) was largely produced for use in nuclear reactors. High-purity reactor grade heavy water, which has a deuterium concentration of 99.75 percent or greater, has been used to operate reactors with natural uranium.

In the last decade, the market for deuterium has significantly expanded and evolved beyond nuclear reactor use. Non-nuclear use of deuterium includes but is not limited to production of: advanced electronics, deuterated solvents, deuterated pharmaceuticals, hydrogen arc-lamps, neutron generators, and tracers in hydrological, biological, and medical studies. Despite this market change, the NRC has continued to control all exports of deuterium under the general or specific export licensing provisions in 10 CFR part 110. The NRC has determined, in consultation with the Executive Branch, that it is appropriate to revise its regulations and transfer the export licensing control of non-nuclear end uses of deuterium to the Department of Commerce, as was done for the non-nuclear end uses of nuclear graphite in 2005 (70 FR 41937; July 21, 2005).

Over the past 10 years, the quantity of deuterium exported for non-nuclear end use has steadily increased. A growing number of companies have been required to obtain specific licenses to export deuterium for non-nuclear use because the quantity exceeded the general license quantity thresholds. As stated in the NRC final rule published in this edition of the *Federal Register* in conjunction with this Commerce final rule, the NRC's recent licensing experience has shown that deuterium has been exported almost exclusively for non-nuclear industrial and research end uses, prompting the reevaluation of NRC licensing requirements concerning these non-nuclear end use exports. Other supplier nations have export controls over deuterium but have limited them to cover exports "for use in a nuclear reactor." This limitation appears in both the Nuclear Non-Proliferation Treaty Exporters Committee (Zangger Committee) and the Nuclear Suppliers Group (NSG) clarifications of items on the Trigger List. The United States is a member of the Zangger Committee and a Participating Government of the NSG.

As stated in the NRC final rule published in conjunction with this Commerce final rule, the history of the use of deuterium exported under the NRC's authority indicates that deuterium has

not been diverted for known illicit purposes to produce weapons-grade material or for use in unsafeguarded nuclear activities. To the extent that any risk of diversion may exist, exports of deuterium for non-nuclear end use will continue to be controlled by the Department of Commerce under the EAR, and appropriate control mechanisms exist within national regulatory authorities and the international community to detect efforts to divert deuterium for known illicit purposes. Exports and reexports of deuterium for non-nuclear end use will be controlled for Nuclear Proliferation (NP) Column 2 under the EAR. A license will be required for all destinations controlled for NP 2 reasons, which means an authorization (a BIS license or license exception) will be required under the EAR for exports and reexports to these destinations. In addition, the end-use and end-user controls under part 744 of the EAR will impose restrictive license requirements for exports, reexports, and transfers (in-country) involving end uses and end users that would be contrary to U.S. export control interests, *e.g.*, under § 744.2 (Restrictions on certain nuclear end uses), § 744.6 (Restrictions on certain activities of U.S. persons), and to entities of concern (*e.g.*, Entity List and Denied Persons List). The U.S. NRC took this robust control structure under the EAR into account when determining that appropriate destination, end-user, and end-use based controls will be in place to appropriately control the deuterium for non-nuclear end use. The following section describes the changes made to the EAR to control the deuterium moved from the export control authority of the NRC to the export control authority of BIS under the EAR.

Amendments to the Export Administration Regulations (EAR)

This final rule revises the heading, the License Requirement Note, and the Related Controls paragraph, Related Definitions paragraph and the Items paragraph in the List of Items Controlled section to control deuterium under ECCN 1C298 as described below. The deuterium added to ECCN 1C298 will be controlled for the same reason and have the same license exception eligibility as the graphite controlled under 1C298, so no changes are made to the Reasons for

Control paragraph in the License Requirements section and License Exceptions section. The deuterium, as referenced above, will be controlled for NP Column 2, and License Exceptions LVS, and GBS will not be available.

This final rule revises the heading of ECCN 1C298 by adding the term deuterium in addition to the graphite that is already controlled under 1C298. Both graphite and deuterium will be controlled under ECCN 1C298 when the graphite or deuterium is intended for use other than in a nuclear reactor and meets the additional control parameters under Items paragraphs .a or .b of 1C298. Because this final rule is adding Items paragraphs .a and .b in the List of Items Controlled section to further describe the graphite and deuterium controlled under ECCN 1C298, this final rule removes the control text from the heading that described what graphite was controlled under the ECCN prior to this final rule being published. This removed control text from the heading is being added as new items paragraph .a under 1C298.

This final rule revises License Requirement Note to ECCN 1C298 to make one conforming change. This final rule adds the term ‘deuterium’ to specify that all graphite and deuterium, as defined in ECCN 1C298, intended for use in a nuclear reactor is subject to the export licensing authority of the NRC.

This final rule adds a Related Controls paragraph (3) in the List of Items Controlled section of ECCN 1C298 to provide greater detail on the deuterium, including any deuterium compound, that, when intended for use in a nuclear reactor, is subject to the export licensing authority of the NRC.

This final rule adds a new Related Definition for Deuterium in the List of Items Controlled section of ECCN 1C298. This ECCN-specific definition specifies ‘Deuterium’ means deuterium and any

deuterium compound, including heavy water, in which the ratio of deuterium atoms to hydrogen atoms exceeds 1:5000.

Lastly, this final rule revises the Items paragraph in the List of Items Controlled section to add Items paragraphs .a and .b. This final rule adds Items paragraph .a to identify the graphite controlled under ECCN 1C298. As referenced above, this is the same control parameter text that was previously in the heading, but is now being moved to items paragraph .a under ECCN 1C298. This final rule adds Items paragraph .b to identify the ‘deuterium,’ including any deuterium compound, including heavy water that when it meets the control parameter text of this paragraph .b will be controlled under ECCN 1C298. Specifically, ‘deuterium’ not for use in a nuclear reactor will be controlled under ECCN 1C298.

Export Control Reform Act of 2018

On August 13, 2018, the President signed into law the John S. McCain National Defense Authorization Act for Fiscal Year 2019, which included the Export Control Reform Act of 2018 (ECRA)(codified, as amended, at 50 U.S.C. Sections 4801–4852). ECRA provides the legal basis for BIS’s principal authorities and serves as the authority under which BIS issues this rule.

Rulemaking Requirements

1. Executive Orders 13563 and 12866 direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). Executive Order 13563 emphasizes the importance of quantifying both costs and benefits, of reducing costs, of harmonizing rules, and of promoting flexibility. This final rule has been designated a “significant regulatory action,”

although not economically significant, under section 3(f) of Executive Order 12866. Commerce estimates that this rule will result in a minimal increase to the number of license requests submitted to BIS annually.

2. Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.) (PRA), unless that collection of information displays a currently valid Office of Management and Budget (OMB) Control Number.

This rule involves the following OMB-approved collections of information subject to the PRA: 0694-0088, “Multi-Purpose Application,” which carries a burden hour estimate of 29.6 minutes for a manual or electronic submission; 0694-0096 “Five Year Records Retention Period,” which carries a burden hour estimate of less than 1 minute; and 0607-0152 “Automated Export System (AES) Program,” which carries a burden hour estimate of 3 minutes per electronic submission. This rule changes the respondent burden by increasing the estimated number of submissions by 20. Specifically, BIS estimates that this control of deuterium under the EAR will result in an increase of twenty license applications submitted annually to BIS. The additional burden falls within the estimated burden approved by OMB for the following information collections: 0694-0088, 0694-0096, and 0607-0152.

Any comments regarding these collections of information, including suggestions for reducing the burden, may be submitted online at <https://www.reginfo.gov/public/do/PRAMain>. The particular information collection may be found by using the search function and entering either the title of the collection or the OMB Control Number.

3. This rule does not contain policies with Federalism implications as that term is defined in Executive Order 13132.

4. Pursuant to section 1762 of the Export Control Reform Act of 2018 (50 U.S.C. 4801-4852), this action is exempt from the Administrative Procedure Act (5 U.S.C. 553) requirements for notice of proposed rulemaking, opportunity for public participation, and delay in effective date.

5. Because a notice of proposed rulemaking and an opportunity for public comment are not required to be given for this rule by 5 U.S.C. 553, or by any other law, the analytical requirements of the Regulatory Flexibility Act, 5 U.S.C. 601, *et seq.*, are not applicable. Accordingly, no regulatory flexibility analysis is required and none has been prepared.

List of Subjects in 15 CFR Part 774

Exports, Reporting and recordkeeping requirements.

For the reasons stated in the preamble, part 774 of the Export Administration Regulations (15 CFR parts 730-774) is amended as follows:

PART 774 - THE COMMERCE CONTROL LIST

1. The authority citation for 15 CFR part 774 continues to read as follows:

Authority: 50 U.S.C. 4801-4852; 50 U.S.C. 4601 *et seq.*; 50 U.S.C. 1701 *et seq.*; 10 U.S.C. 8720; 10 U.S.C. 8730(e); 22 U.S.C. 287c, 22 U.S.C. 3201 *et seq.*; 22 U.S.C. 6004; 42 U.S.C. 2139a; 15 U.S.C. 1824; 50 U.S.C. 4305; 22 U.S.C. 7201 *et seq.*; 22 U.S.C. 7210; E.O.

13026, 61 FR 58767, 3 CFR, 1996 Comp., p. 228; E.O. 13222, 66 FR 44025, 3 CFR, 2001 Comp., p. 783.

2. In Supplement No. 1 to part 774, Category 1, revise Export Control Classification Number (ECCN) 1C298 to read as follows:

1C298 Graphite and deuterium that is intended for use other than in a nuclear reactor, as follows (see List of Items Controlled).

License Requirements

Reason for Control: NP

<i>Control(s)</i>	<i>Country Chart (See Supp. No. 1 to part 738)</i>
NP applies to entire entry	NP Column 2

License Requirement Note: The graphite and deuterium, as defined in this entry, when intended for use in a nuclear reactor, is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

List Based License Exceptions (See Part 740 for a description of all license exceptions)

LVS: N/A

GBS: N/A

List of Items Controlled

Related Controls: (1) See also 1C107. (2) Graphite having a purity level of less than 5 parts per million “boron equivalent” as measured according to ASTM standard C-1233-98 and intended for use in a nuclear reactor is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110). (3) Deuterium and any deuterium compound, including heavy water, in which the ratio of deuterium atoms to hydrogen atoms exceeds 1:5000; and intended for use in a nuclear reactor is subject to the export licensing authority of the Nuclear Regulatory Commission (see 10 CFR part 110).

Related Definitions: For the purpose of this entry, graphite with a purity level better than 5 parts per million boron equivalent is determined according to ASTM standard C1233-98. In applying ASTM standard C1233-98, the boron equivalence of the element carbon is not included in the boron equivalence calculation, since carbon is not considered an impurity. For the purpose of this entry, ‘Deuterium’ means deuterium and any deuterium compound, including heavy water, in which the ratio of deuterium atoms to hydrogen atoms exceeds 1:5000.

Items:

- a. Graphite with a boron content of less than 5 parts per million and a density greater than 1.5 grams per cubic centimeter that is intended for use other than in a nuclear reactor;
- b. ‘Deuterium’ not for use in a nuclear reactor.

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